

What is claimed is:

1. A system for managing agricultural water management system design comprising:
 - a computer;
 - an input device for accepting GPS data into said computer;
 - means within said computer for constructing a drainage system design from said GPS data,
 - means for generating a cost estimate for said drainage system, and
 - means for producing an instruction set for tooling machines installing said drainage system.
2. The system of claim 1 comprising:
 - a mobile vehicle for collecting survey data in GPS format.
3. The system of claim 2 wherein said mobile vehicle carries an RTK system.
4. The system of claim 3 wherein the mobile vehicle is selected from the group consisting of: ATV'S, construction equipment, tractors, trucks, cars, boats, ships, helicopters, and airplanes.
5. The system of claim 1 further comprising:
 - A tooling means for installing said drainage system according to said instruction set produced by said management means.
6. The system for managing drainage system design of claim 1 wherein the management means is a personal computer.
7. A method of managing agricultural water management system design comprising:
 - gathering GPS data of a field needing a drainage system;

constructing a drainage system design from said GPS data;
generating a cost estimate for said drainage system; and
producing an instruction set for tooling a machine installing said drainage system.

8. The method of managing drainage system design of claim 7 further comprising forming a contour map of the field.

9. An improved tiling machine for clearing sub surface areas, said tiling machine having an on-board computer and a GPS device, the improvement comprising:

a GPS-based instruction set downloaded into and executed by said on-board computer for controlling grade and depth of sub surfaces areas cleared by the tiling machine.

10. A system for installing sub surface systems in a designated area comprising:

a field computer comprising logic instructions for surveying and mapping a designated area with GPS coordinates;

a Real-Time Kinematic Differential Global Positioning System device electronically connected to said field computer for collecting survey data points;

an automated machine tool for installing sub surface components having a computer for controlling the grade according to an instruction set;

a management computer comprising logic instructions for preparing a contour map from latitude, longitude, and altitude coordinates, a sub surface system design, preparing an instruction set to control the machine tool grade, and calculating cost estimates for the sub surface system design; and

at least one I/O means for transferring data between the field computer, the management computer, and the automated machine tool.

11. An article of manufacture comprising:

a computer program product, said computer program product comprising a means for grid initialization, a means for dropping a point on a grid, a means for querying the altitude of the point, and a means for generating topographic lines.